Environment 166
Leadership in Water Management
Fall 2021 – T/Th 11:00-12:15 PM

Discussion Sections Th 4:00-4:50; 5:00-5:50; 6:00-6:50

Instructor:
Noah Garrison, Environmental Science Practicum Director – ngarrison@ioes.ucla.edu
Office hours – Tuesdays 1:30-3:00 PM or by appointment

TAs:
Emma Barnosky, PhD student, UCLA IoES – barnosky@g.ucla.edu
Office hours – Thursdays 1:00-12:00 PM or by appointment at https://ebarnosky.youcanbook.me/

Viraj Sawant, PhD student, UCLA IoES – virajsawant@g.ucla.edu
Office hours –Wednesdays 10:00AM-12:00PM or by appointment

Course Description and Goals

This course aims to provide students with an overview of water systems as they are diverted for human use and an examination of current water supply, water quality, and broader environmental issues implicated by human use of and reliance on water. The course will cover interactions between scientific, technological, management, and regulatory and policy or advocacy considerations, while investigating models of effective leadership in the environmental field. It will include in-depth analyses of past and current efforts to solve water supply and pollution challenges and on the application of science-based evidence to decision-making where applicable, and will use case studies of individuals who make a positive difference through their leadership, with a focus on events and water systems in California.

The course will be split roughly evenly between lectures and discussion with invited experts, scholars, and practitioners on relevant issues such as pollution, climate change, availability and reliability of water supply, impacts to water systems and ecosystem function, and examples of water infrastructure. There will be an emphasis on solutions involving integrated water supply and wastewater systems. Leadership development will include writing instruction and public communications training.

Attendance and Participation

There will be two (2) one-hour-and-15-minute lectures and one fifty-minute discussion section per week. You are expected to attend all lectures and sections in-person and to participate in class discussions. However, I fully understand this may not or likely at some point, will not, be possible for some of you given our current situation. As a result, all class sessions will be live streamed and recorded through Zoom.

Attendance will be taken in class and through the live Zoom, and for some weeks, you will be expected to participate in discussion of the week's readings and any current articles or events posted to the class CCLE webpage by being "on call" (see section on readings below). You are allowed two unexcused absences for live lectures – either in-person or logged in to Zoom; for any additional lectures missed, you will be expected to watch the recorded sessions for that week by Sunday night and to submit a 1-page (double-spaced) summary of some aspect of the lectures, what you found interesting about them, and how they relate to broader environmental issues.

Discussion sections will be streamed or recorded to the best of our ability, given classroom technology constraints, but you are expected to attend in-person meetings. For any in-person discussion (or live Zoom session if available) section missed, you may either:

- **At least one hour before the start of your section,** submit a question regarding some aspect of the week's readings for the TA through the class CCLE page discussion forum thread for that week AND note, in a response to your comment, whether (or how!) the TA raised your comment in discussion.
- **By Sunday night of that week,** submit a 1-page, double spaced summary or brief analysis of an interesting news article or blog posting on a current water topic from the past two weeks. Possible sources include mainstream news reporting such as the New York Times, Los Angeles Times, Sacramento Bee, Wall Street Journal, Scientific American, etc.; reporting from online sources such as Vox, Mother Jones, or others that frequently cover water or environmental issues; or blog and consolidation sites such as Maven's Notebook (a GREAT source for water related news and analysis!), Legal Planet, Stanford's Water in the West, BC Water News, or Environmental Health News.

*A class COVID-19 policy is presented below. Our goal is to have you attend the live, in-person meetings as much as possible – there is simply no substitute for face-to-face instruction and dialogue! But we also realize how challenging this past year and the current situation have been for you all, and the pressures and anxieties you may be experiencing. If you feel uncomfortable with the in-person setup or if you feel any symptoms of being sick **AT ALL**, you are encouraged to stay home and watch the Zoom version.*

COVID-19 and our Classrooms

Ensuring a safer campus depends on each of us following the latest UCLA health and safety guidelines. While campus policies must be modified to address changing local, state, and national orders and guidance, the most current information is available at covid-19.ucla.edu.

At present, each of us:

- Is responsible, regardless of vaccination status, for wearing an approved mask that fully covers our nose and mouth for the duration of class, section, office hours, or other course-related activity.
    - Disposable masks are available at the Wooden Center for anyone unable to obtain a mask or who has forgotten to bring one to campus.
    - Appropriate masks include two-ply woven fabric masks, surgical masks, non-woven KN95 masks, and N95 respirators.
    - Please note that scarves, balaclavas/ski masks, single-layer fabric masks and neck gaiters, bandanas, and turtleneck collars are **not** compliant.
    - For those that have a disability-related reason not to wear a mask, you can contact the Center for Accessible Education (CAE) to obtain an approved accommodation and any appropriate alternative mitigation measures to be sent to instructors.
- Must be fully vaccinated or have submitted an exception request. Per the COVID-19 Response and Recovery Task Force, unvaccinated students with pending or approved exceptions must comply with twice-weekly testing.

- Is required to complete daily symptom checks prior to coming to campus, regardless of vaccination status, and must stay home if you are not cleared by the symptom survey or are advised by the Exposure Management Team to quarantine or isolate. Please contact me if you have questions about the policies regarding attendance detailed in the syllabus.
- Will refrain from eating in the classroom except for those with approved accommodations. If eating for medical reasons or taking a drink, please do so quickly and then put your mask back on.

We will do our best to support students who are complying with any requirement to remain away from campus. Please contact me or your TAs if you need to stay home, and we will make alternative arrangements for you to attend class virtually or access class recordings/notes.

Be advised that refusal to comply with current campus directives related to COVID-19 mitigation may result in dismissal from the classroom and referral to the Office of Student Conduct. If you have any questions or concerns about UCLA's COVID-19 protocol, go to https://covid-19.ucla.edu/information-for-students/; if you have any questions specific to this course, we are happy to talk further. Thank you for protecting your fellow Bruins!

Course organization, assignments, quizzes/midterms, and final project
There will be one short written (with a partner) and one short verbal advocacy (individual) assignment, two quizzes, required readings, and a comprehensive, final group paper and presentation. Available topics and sign-up sheets for the short assignments and final project will be made available beginning after class on Tuesday, September 28.

All assignments are to be written in
Times New Roman, 12-font, double-spaced unless otherwise noted.

Short memo and advocacy assignment
Each of you will, *with a partner*, select a water-related topic from an approved list to write a short, objective memorandum as the staff member of a relevant California Water Agency (e.g., State Water Board, Department of Water Resources, City of Los Angeles Department of Water and Power, office of the Governor) describing the issue, context and relevant history around it, provide supporting scientific data, cost research, or other data, and discuss potential solutions, including benefits or drawbacks, to provide information for the agency or deliberative body to take action. You should NOT advocate for a particular course of action – this is meant to be an objective review of the issue – but be clear whether there are known or suspected benefits or concerns raised by any approach, or whether there may be recognized agreement for a recommended course of action.

Then, you and your partner will give verbal testimony to the relevant agency *advocating* for, or against, a particular course of action based on your research findings for the memo, with a twist – one of you must argue *in favor* of a particular course of action, the other *against* it.

Group project and presentation
The final group project paper will be a 20-page (***maximum***) paper on a relevant topic of your team's choice from a list of topics provided by the instructors. Your team, **5 to 7 students**, will need to lay out all sides of your chosen issue (not just the position or approach you are advocating for!), what the team's desired outcome is on the topic, and develop a strategy for

how one could achieve the desired outcome (policy, legislation, financing, technology, etc.). The presentation will be a 10-minute presentation of the results of your project to be given during the scheduled final exam period on Dec. 9. Not everyone needs to speak as part of the final presentation, and feel free to be creative with your presentations!

Again, available topics and sign-up sheets for the short assignments and final project will be made available beginning after class on Tuesday, September 28.

Readings and on-call discussion

Course readings will be posted to the CCLE Webpage. After class on Tuesday, September 28, each student will sign up for two dates during the quarter for which you will be responsible for being "on-call" to answer questions on assigned readings and drive discussion on related issues for that week. (Students will be able to change their assigned week if needed due to known conflicts in advance). During your on-call weeks you may be called on at random during or at the end of class by the instructor.

Discussion section group case study presentations

During selected weeks, students will also be responsible for providing, in a group (size TBD) during discussion section, a brief summary on a subset of the week's readings and a posted case study and for leading a discussion of the case study and its relationship to class materials.

Grading

Course grades are determined by:

- Two **quizzes** (10% each, 20% total) that will be given during the discussion sections of ***weeks 3 and 5.***
- Two **short assignments** (10% each, 20% total), with both a partner and individual component, as follows:
    - **Memo**: A 3-page, objective report/memo, ***written with one partner***, on an issue you jointly select from a list provided by the Instructor and TAs, AND
    - **Testimony**: Delivery of verbal testimony ***individually*** advocating for a course of action to be taken by a public agency to address the issue you wrote about in the memo. Here's the catch – *you and your partner must argue on opposite sides of the issue*!
- A **final group project** (25%) and **group presentation** (10%)
- **Class participation** (25%) including asking questions, responding to on-call questions, completing makeup summary assignments, and leading one of the weekly discussion section discourses.

If you have special circumstances that prevent you from turning in an assignment on time, please contact one of the TAs as soon as possible; absent prior approval for extenuating circumstances or an emergency situation that prevented you from communicating with your TA in advance, late assignments will be awarded 90% credit if turned in by 10:00AM the next morning, 80% if turned in the following day by 5:00PM, and 50% if turned in by the next discussion section the following week. ***Without prior approval or exigent circumstances, assignments that are more than 7 days late will not be accepted.***

Two percent extra credit is available for all students that attend or sign in to watch a public hearing on water supply or quality for at least two hours, and complete a one-page summary description of your experience. Examples of acceptable meetings or hearings include, but are

not limited to: MWD, LA Regional Water Quality Control Board or State Water Resources Control Board, CA Coastal Commission, LA City Department of Public Works Board or DWP Commission meetings, West Basin MWD, Santa Monica Water Advisory Committee, etc. A schedule of some of those meetings will be put online.

Assignments Timeline:

Week 2

- Friday, Oct. 8 by 5:00 PM - Final Project Group selection due

Week 3

- Thursday, Oct. 14 – First quiz during discussion section (10%); Topic for final presentation due at the start of Thursday class
- Friday, Oct. 15 by 12:00 PM (noon) – Objective memo and advocacy partner and topic selection due

Week 5

- Thursday, Oct. 28 – Second quiz during discussion section (10%); Group project topic outline is due at the start of Thursday class, via CCLE

Week 6

- Thursday, Nov. 4 – 3-page double-spaced objective memo paper due at the start of class, via CCLE

Week 8/9

- Sunday, Nov. 14 – Draft of final paper due at 11:59 PM, via CCLE
- Thursday, Nov. 18 – Class and Discussion Section – Public testimony, 2 minutes per person. Sign up for time slots by Wednesday, Nov. 10.
- Thanksgiving holiday - *no class or discussion section on Thursday, Nov. 25*!

Week 10

- Friday, Dec. 3, 11:59 PM – Final group paper submitted via TURNITIN on CCLE
- Thursday, Dec. 9 – Final group presentations during final exam period – bring popcorn!

Class Email and Contact Policy

There are 90+ students in the class – to avoid answering the same question multiple times, spending time emailing instead of teaching, and to ensure everyone benefits from answers to good questions, we have developed a streamlined communications policy.

1. Your question may be answered in the class syllabus, so always check first if the information is there!
2. If it is not there, then please post ALL questions generally applicable to the class (about due dates, assignments, class content, etc.) on the CCLE discussion board, as other people probably have the same questions. The TAs and instructors will check the board regularly and respond. If you are a student in the class and you answer a question on CCLE, you will receive extra credit (0.1% on your final grade for the first person who accurately answers a question, up to a maximum of 1%)
3. Drop in to our scheduled office hours to ask a question in person!
4. If you have something unrelated to class topics, that is specific to your situation or that you prefer to discuss in confidence with your instructors or TAs, please then contact them at their individual email address.

Accommodations
If you need any accommodations because you are registered with the Center for Accessible Education, are ill, or have any request, please let us know at the beginning of term or as soon during the term as you are able. We will do our absolute best to support you.

Academic Integrity and Campus Resources
Although it is permissible (and encouraged!) to discuss both content and approach with classmates, all submitted work MUST BE YOUR OWN. *Duplicate and very similar assignments will be awarded no credit.* You are expected to abide by the University's policy on Academic Integrity, and guidelines established by the UCLA Academic Senate will be followed if a student engages in any form of academic dishonesty. If you are not sure whether a particular action is in violation of UCLA's standards of academic integrity or constitutes plagiarism, please contact the instructor, and err on the side of caution. Plagiarism is a serious offense – when in doubt, cite your sources!
https://www.deanofstudents.ucla.edu/portals/16/documents/uclacodeofconduct_rev030416.pdf.

Code of Conduct
You have a responsibility to treat your fellow students, instructors, and guests with courtesy, civility, and respect. All people have the right to learn without interference from others. Guidelines established by the UCLA Academic Senate will be followed if a student is purposefully disrupting the educational process. Please conduct and express yourself in a mature and considerate manner that is respectful to all individuals. This includes respecting the rights of others to comment and participate fully in class. You have a responsibility to refrain from any form of bullying, hazing, or indecent behavior.

Discrimination, Harassment and Violence Policy
UCLA is committed to maintaining a community dedicated to the advancement, application and transmission of knowledge and creative endeavors through academic excellence, where all people who participate in University programs and activities, can work and learn together in an atmosphere free of harassment, exploitation, or intimidation. Acts of discrimination, harassment, intimidation, assault and other forms of violence will not be tolerated. Every student at UCLA has the right to participate in this class free from these behaviors or actions.

If you have been, or are concerned about someone who you believe may been subjected to dating violence, domestic violence, sexual assault, sexual violence, sexual harassment, racism, discrimination, or stalking, you can talk in confidence with UCLA's CARE Advocacy Office for Sexual and Gender-Based Violence, 1st Floor Wooden Center West or at 310-206-2465, or CAREadvocate@caps.ucla.edu. You can also contact the police at 911, and/or the UCLA Title IX officer, 2241 Murphy Hall or at (310) 206-3417, or titleix@conet.ucla.edu. If you have experienced or witnessed acts of discrimination, you may also contact the Office of Equity, Diversity, and Inclusion at WeListen@equity.ucla.edu or by phone at (310) 825-3935.

Week-By-Week Course Outline

Zero Week – September 23

Overview of course. Introduction to California water systems and overview of international water supply and quality issues.

Readings:

1. Dorothy Green Op Ed (on CCLE)
2. UN World Water Development Report 2020 (on CCLE)
3. Intro to California Water Systems (Skim This): http://mavensnotebook.com/the-notebook-file-_cabinet/californias-water-systems/
4. NASA Satellites Reveal Major Shifts in Global Freshwater: https://www.nasa.gov/press-release/nasa-satellites-reveal-major-shifts-in-global-freshwater
5. United Nations, Sustainable Development Water Goals: https://www.un.org/sustainabledevelopment/oceans/ and https://www.un.org/sustainabledevelopment/water-and-sanitation/

Week One – Sept. 28/30

Guest speaker – Sept. 28: James Salzman - UCLA School of Law Donald Bren Distinguished Professor of Environmental Law and Professor of Environmental Law at the UCSB Bren School of Environmental Science and Management; author of Drinking Water: A History (2012) - noted as a "Recommended Read" by Scientific American. Ranked in a 2012 study by Phillips and Yoo as the fifth most cited environmental law professor.

Lecture – Sept. 30: Clean Water Act 101. The regulatory framework for water quality in California: the federal Clean Water Act and California Porter-Cologne Water Quality Control Act. Our constitutional framework and organization of government, including the separation of powers at the federal level and the relationship of authority between the federal government and the states. Brief CEQA and NEPA overview.

Readings:

Additional resources can be found at the EPA Watershed Academy Web: https://www.epa.gov/watershedacademy - the site contains multiple articles/modules - and is a good background for a number of scientific and technical, legal and regulatory, and other aspects of water management.

1. U.S. EPA. Introduction to the Clean Water Act (long white paper - please read pages 2-8 in detail and skim overall - feel free to comment on any section)
2. Baron, Jill S., et al. (2003). Sustaining Healthy Freshwater Ecosystems, *Issues in Ecology, No. 10, Winter 2003.*
3. U.S. EPA. Agents of Watershed Change
4. Eilperin, Juliet, and Brady, Dennis. Administration finalizes repeal of 2015 water rule Trump called 'destructive and horrible,'*Washington Post*, September 11, 2019.
5. Friedman, Lisa. Biden Administration to Restore Clean-Water Protections Ended by Trump, *New York Times* June 9, 2021.

Week Two – October 5/7

Lecture – Oct. 5: California Water Rights and fallout from the California Water Wars.

Guest Lecturer – Oct. 7: Felicia Marcus - Felicia is the William C. Landreth Visiting Fellow at Stanford University's Water in the West Program. She most recently served as chair of the

California State Water Resources Control Board, the California state agency responsible for overseeing the allocation of California's water resources and for safeguarding the quality of Californians' water. Before her appointment by the Governor to the Water Board, Felicia served served as the regional administrator of the Environmental Protection Agency's Pacific Southwest region during the Clinton Administration; as the president of the board of Public Works for the City of Los Angeles; and as the western director for the Natural Resources Defense Council and as the executive vice president and chief operating officer of the Trust for Public Land. She was also a founder and general counsel to Heal the Bay.

Readings:

1. Maven's Notebook - Intro to California Water Systems (see https://mavensnotebook.com/the-notebook-file-cabinet/californias-water-systems/) – this was assigned for week 1, but review again here.
2. California Water Action Plan
3. PPIC (2018). California's Water - Fact Sheet Portfolio.
4. San Francisco Chronicle – OpEd by Rick Frank: California Water Law Must Change – Quickly
5. Wesselman, Eric, and Wright, Robert. California's WaterFix was always a dangerous deal. Now the Trump administration is making it worse. *Los Angeles Times*, September 7, 2018.
6. Kasler, Dale, and Sabalow, Ryan. Newsom downsizes Delta tunnels plan, from two to just one, *Sacramento Bee*, May 3, 2019.
7. Boxall, Bettina. Newsom pledged to fix California water politics. Now he's bogged down in the delta. *Los Angeles Times*, January 23, 2020.

Week Three – October 12/14

Guest Residency Lecture – Oct. 12: *Mark Gold - Deputy Secretary for Oceans and Coastal Policy and Director of the Ocean Protection Council at the California Natural Resources Agency. Former UCLA Associate Vice-Chancellor for Environment and Sustainability and the Acting Director of the Institute of the Environment and Sustainability, former President of Heal the Bay, and previously a member of the Metropolitan Water District Board of Directors for the city of Los Angeles and Mayor Garcetti's Water Cabinet. Mark has worked extensively on coastal protection and water pollution at the local, state, and national level for more than 20 years. He developed and formerly taught the Leadership in Water Management class you are currently taking.*

Topic: Stormwater pollution, wastewater and publicly operated treatment works (POTWs), and sewage spills.

Guest lecturer - Oct. 14: Liz Crosson, Former Director of Infrastructure at the Office of Mayor Eric Garcetti. Former Deputy Chief Sustainability Officer (City of Los Angeles), and Former Executive Director of the Los Angeles Waterkeeper.

Readings:

1. Moe, Annelisa (2019). Stormwater Report, Heal the Bay (Full report and appendix available at: https://healthebay.org/wp-content/uploads/2019/12/Stormwater-Report-FINAL.pdf)
2. U.S. EPA (2014) Enhancing Sustainable Communities with Green Infrastructure, Report 100-R-14-006 (Read pages 1-24).
3. Frank, Richard. The Clean Water Act, Federalism, Big Money and the California Supreme Court, *Legal Planet* (blog), September 13, 2016.

4. Ghirelli, Nicholas R. Court of Appeal Holds that Provisions of San Diego County MS4 Permit Constitute Unfunded State Mandates, RG Law, December 20, 2017
5. Department of Justice (2003), City of Los Angeles Admits Liability
6. Lopez, Robert J et al., 'Unacceptable, irresponsible': How 17 million gallons of sewage fouled Santa Monica Bay, *Los Angeles Times,* July 14, 2021
7. Boxall, Bettina, L.A.'s ambitious goal: Recycle all of the city's sewage into drinkable water, *Los Angeles Times*, February 22, 2019
8. Barragan, Bianca, Measure W: LA's parcel tax for stormwater recycling, explained, *Curbed, Los Angeles,* Nov. 5, 2018 (available at https://la.curbed.com/2018/10/18/17930972/measure-w-los-angeles-ballot-measure)

Week Four – October 19/21

Lecture – Oct. 19: Groundwater - supply, pollution, science, policy; California's Sustainable Groundwater Management Act and more on the state of our water supplies and their governance structures.

Guest Residency cont'd: Mark Gold – October 21: Introduction to Integrated Water Management – water recycling, groundwater, stormwater capture, conservation.

Readings:

1. California Water Boards. What is IRWM?
2. Federico, Felicia, et al. (2019). Environmental Report Card for Los Angeles County – UCLA Sustainable LA Grand Challenge. Read Executive Summary and sections on Water Supply and Consumption and Surface Water Quality. (Full Document is Available at: https://escholarship.org/uc/item/5zg1g4vd)
3. City of Los Angeles (2015). Stormwater Capture Master Plan. Read Executive Summary. (document available on CCLE and at http://ladwp.com/scmp)
4. City of Los Angeles (2018). One Water LA 2040 Plan – Final Draft. Read Executive Summary pp. 1-11, 18-31. (Document on CCLE)
5. PPIC (2017). Just the Facts - Groundwater in California
6. Young, Mike, and McAteer, Bryce (2017). Sharing Groundwater: A Robust Framework and Implementation Roadmap for Sustainable Groundwater Management in California. Duke Nicholas School for Environmental Policy Solutions, Working Paper NI WP 17-02. Lengthy, but read through page 32 and skim the case studies.

Week Five – October 26/28

Lecture – Oct. 26: All the pollution - agricultural water use and runoff, small community water systems, fracking, and emerging contaminants.

Guest lecturer - Oct. 28: Arohi Sharma - Natural Resources Defense Council. Arohi Sharmi is a Policy Analyst on the Water and Agriculture & Wildlife teams in NRDC's Nature Program, where she advocates for policies that protect and restore rivers and aquatic ecosystems in California and promote sustainable agricultural practices to reduce wasteful water use and to protect soil health. Prior to NRDC, Arohi worked for the Ethiopian Government to help craft the

nation's first sustainable agricultural development strategy, and served as a legislative staffer on Capitol Hill for the U.S. Senate Agriculture Committee and Senator Cory Booker.

Readings:

1. NRDC (2013). Agricultural Water Conservation and Efficiency Potential in California
2. Rodriguez-Delgado, Cresencio, As California restricts water use for farmers, low supply levels add to drought's harsh reality. *PBS News Hour*, Sept. 3, 2021 – available at https://www.pbs.org/newshour/nation/as-california-restricts-water-use-for-farmers-low-supply-levels-add-to-droughts-harsh-reality.
3. Harter, T., et al. (2012). Addressing Nitrate in California's Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater. Report for the State Water Resources Control Board Report to the Legislature. Center for Watershed Sciences, University of California, Davis. (Read pp. 1-29; 47-51.)
4. Water Foundation (2020). Groundwater Management and Safe Drinking Water in the San Joaquin Valley – Analysis of Critically Over-drafted Basins' Groundwater Sustainability Plans
5. Bangia, K., et al. (2019) *Assessment of contaminants in California drinking water by region and system size*, AWWA Water Science 2(5)

Week Six – November 2/4

Guest Lecture – Nov. 2: Climate change, drought, the public trust and California's water future.

Guest Residency cont'd: Mark Gold – Nov. 4 - California's coastal waters: climate and pollution.

Readings:

1. California's Fourth Climate Change Assessment – Los Angeles Region Report.
2. Harvey, Chelsea. Think California's current drought is bad? Past incarnations have lasted hundreds of years. *Washington Post*, September 19, 2016.
3. Persad, Geeta, G. (2020). Inter-model agreement on projected shifts in California hydroclimate characteristics critical to water management, *Climatic Change*, 162:1493–1513.
4. Philpott, Tom. The Biblical Flood That Will Drown California, *Mother Jones*, August 26, 2020.
5. Frank, Richard (2018) California Court Finds Public Trust Doctrine Applies to State Groundwater Resources, *Legal Planet* (blog), August 29, 2018

Week Seven – November 9

Guest Lecturer – Nov. 9: Edith de Guzman – UCLA IoES. Edith de Guzman is a PhD student in the IoES and the former Director of Research at TreePeople, where she managed research to identify the efficacy, benefits, and applicability of program and policy approaches to extreme heat mitigation and watershed management in the Los Angeles area. She co-founded and directs the Los Angeles Urban Cooling Collaborative, a multi-disciplinary, national partnership of universities, nonprofit organizations, community groups, and government agencies seeking data-driven, inclusive strategies for cooling urban areas and protecting vulnerable communities from

heat-related health risks using urban forests and increased reflectivity. She earned both her Master's degree in Urban Planning and her BA in History/Art History from UCLA.

No class on November 11 (Veterans Day)

Readings:

1. Public Policy Institute of California (2016). Managing Water for the Environment During Drought – Lessons from Victoria, Australia.
2. State of California Proclamation of a State of Emergency (CA Drought – 10-19-2021)
3. Listen to "In California, 1 State Is Seeing 2 Drastically Different Responses To The Drought", NPR, August 6, 2021 – available here: https://www.npr.org/2021/08/06/1025551690/in-california-1-state-is-seeing-2-drastically-different-responses-to-the-drought

Week Eight – November 16/18

Guest Lecturer – Nov. 16: Cindy Lin – Founder and CEO of HOVE Social Good Intelligence Company and former Southwest Regional Coordinator for U.S. EPA Region IX. Cindy is also a triple Bruin – having obtained a B.S. in Biology, M.S. in Environmental Chemistry, and D.Env. in Environmental Science and Engineering from UCLA.

Lecture on Nov. 18 will be used for our public testimony - get ready to advocate your position to the class!

Readings - TBD:

1. Jack Silvers, Water is China's Greatest Weapon and its Achilles Heel, *Harvard Political Review*, October 16, 2020
2. Ting Ma, et al., (2020) Pollution exacerbates China's water scarcity and its regional inequality, *Nature Communications* 11(1):650.

Week Nine – December 23/25

Lecture – Nov. 23: Jobs talk with Noah and Mark. The worlds of academia, NGOs, government and consulting.

No Readings this week. Have a happy Thanksgiving!

Week Ten – Nov. 30/Dec. 2

Guest lecturer – November 30: Joel Reynolds – Western Director and Senior Attorney, Mammals Program of the Natural Resources Defense Council. Joel helped open the Los Angeles Office of the NRDC in 1989, the first Southern California office established by a national environmental organization, after a decade working at the Center for Law in the Public Interest and the Western Center on Law and Poverty.

Lecture – Dec. 2: Water and equity; California's human right to water, Flint, Michigan and our nation of lead, access to running water; class wrap up.

Readings:

1. Sohn, Tim. What the Hell is Going on with the Pebble Mine? *Outside Online*, October 28, 2020.

2. Record of Decision for Application Submitted by Pebble Mine Partnership to: The United States Army Corps of Engineers (Department of the Army Permit # POA-2017-00271). November 20, 2020.
3. Friedler, Delilah. Thanks to Trump, Keystone XL Is Back. The Anti-Pipeline Movement Is Ready, *Mother Jones*, February 7, 2020.
4. Kolpack, Dave. Dakota Access pipeline halted pending environmental review, *Christian Science Monitor*, July 7, 2020.
5. Flaccus, Gillian. Historic deal reached to remove 4 massive dams on lower Klamath River, *The Oregonian*, November 7, 2020.

BLOGS AND OTHER RESOURCES FOR WATER NEWS

Check these weekly and read them for discussion in class as relevant. Not required but advisable:

Peter Gleick and Pacific Institute's blog: http://www.pacinst.org/blog/
...and Pacific Institute's monthly newsletter: https://pacinst.org/newsletters/
Emily Green: http://chanceofrain.com/
Aquafornia: http://aquafornia.com/
LA Creek Freak: http://lacreekfreak.wordpress.com/
BC Water News http://www.bcwaternews.com/bcwn/California/CA092713.html
ACWA http://www.acwa.com/blog
National Geographic Freshwater
http://environment.nationalgeographic.com/environment/freshwater/
Maven's Notebook:
http://mavensnotebook.com
http://lacreekfreak.wordpress.com/
Circle of Blue: http://www.circleofblue.org
Water Deeply: https://www.newsdeeply.com/water

Instructor bio

Noah Garrison is the Environmental Science Practicum Director and Director of Undergraduate Initiatives at the UCLA Institute of the Environment and Sustainability, where he oversees the Institute's three-quarter, client-based, original research capstone program and teaches classes including Introduction to Environmental Science, Environmental Politics and Governance, and Leadership in Water Management. A practicing environmental lawyer, Noah previously worked as a staff attorney in the Water Program at the Natural Resources Defense Council (NRDC) from 2007 to 2014, where he focused on legal, policy, and technical issues related to urban runoff and stormwater; green infrastructure and its relationship to water supply, energy use, and climate change; regulation and enforcement under the federal Clean Water Act; groundwater supply and management; and impacts of dams and other flow diversion projects on river systems. Noah is a graduate of Wesleyan University and the University of California at Los Angeles School of Law, with a specialization in Public Interest Law and Policy, and also holds a M.S. in Geological Sciences from the University of California at Santa Barbara.

Teaching Assistant bios

Emma Barnosky is a third year PhD student working with Dr. Boyd and Dr. Heise. She is interested in nature-society relations at the urban-wild interface, and her dissertation work is

specifically focused on wildfire planning and response in California. She holds a Bachelor's degree in Romance Languages with a minor in Anthropology from Colorado College, and has experience working with tech startups, nonprofits, and entertainment agencies. She hopes to use her current research and previous experience to bring together the diverse perspectives necessary to facilitate solutions to pressing environmental issues.

Viraj Sawant is a PhD student working on designing policies to promote sustainable technologies. Before joining the program, Viraj spent two years at Indian Council for Research on International Economic Relations in the energy & climate team working on sustainability policies including technology transfer, embodied jobs in renewable energy sector, climate financing and waste management. Prior to that, he worked as an energy market analyst at a Houston based energy advisory firm- Gelber & Associates. Viraj holds a master's degree in Energy Economics from Rice University and a bachelor's degree in Metallurgical Engineering and Material Science from Indian Institute of Technology, Bombay.
His current work with Prof. Deepak Rajagopal involves looking at electrification of public transit and ride sharing in India from investment and feasibility standpoint. In his free time he likes reading, rock-climbing and exploring food!